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23NOV99 E493801-4 000027
P01/7700 0.00-9927590.1

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The Patent Office
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1. Your reference 85.71394

2. Patent application number
(The Patent Office will fill in this part) **9927590.1** 22 NOV 1999

3. Full name, address and postcode of the
or of each applicant (underline all surnames)
GENPAK Limited
Science Park Square
Falmer, Brighton BN1 9SB
Sussex, U.K.

Patents ADP number (if you know it) 7704331001

If the applicant is a corporate body, give
country/state of incorporation

4. Title of the invention Microarray slides

5. Name of your agent (if you have one) Frank B. Dehn & Co.

"Address for service" in the United Kingdom
to which all correspondence should be sent
(including the postcode)

179 Queen Victoria Street
London
EC4V 4EL

Patents ADP number (if you know it) 166001 ✓

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number	Country	Priority application number (if you know it)	Date of filing (day / month / year)
	—	—	—

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application	Number of earlier application	Date of filing (day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body.

See note (d))

Yes

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9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

-

Description

3

Claim(s)

4

Abstract

1

Drawing(s)

1 + 1

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Priority documents

-

Translations of priority documents

-

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

-

Request for preliminary examination and search (Patents Form 9/77)

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Request for substantive examination (Patents Form 10/77)

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Any other documents (please specify)

-

11. I/We request the grant of a patent on the basis of this application.

Signature

Date 19 November 1999

12. Name and daytime telephone number of person to contact in the United Kingdom

P.M. Jeffrey
01273 244200

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
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7/77

The Patent Office
Cardiff Road
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Gwent NP9 1RH

Statement of inventorship and of right to grant of a patent

1. Your reference	85.71394
2. Patent application number (if you know it)	9927590.1
3. Full name of the or of each applicant	GENPAK Limited
4. Title of the invention	Adhesive Label with grid for microscope slide
5. State how the applicant(s) derived the right from the inventor(s) to be granted a patent	By virtue of contracts of employment
6. How many, if any, additional Patents Forms 7/77 are attached to this form? (see note (c))	-
7.	I/We believe that the person(s) named over the page (and on any extra copies of this form) is/are the inventor(s) of the invention which the above patent application relates to. Signature  Date 21 November 2000
8. Name and daytime telephone number of person to contact in the United Kingdom	P.M. Jeffrey Frank B. Dehn & Co. 01273 244200

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Enter the full names, addresses and postcodes of the inventors in the boxes and underline the surnames

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Reminder

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71394.348

MICROARRAY SLIDES

5 The present invention relates to microarray slides, particularly microarray slides used in manual microarraying.

Microarraying involves the transfer of e.g. biological DNA material from a source e.g. a microtitre plate to a target e.g. a glass microscope or microarray slide. Microtitre plates holding 96, 384 or 1534 different DNA samples are known, and conventionally it is desired to accurately transfer the samples from the source onto the target in the form of small distinct and separate micro spots. Once the material has been deposited in the form of micro spots the individual samples can then be analysed.

20 The accurate transfer of material from a source to a target can be achieved by either robotic or manual spotting. For robotic transfer the configuration of the material on the source can be easily monitored and controlled by setting the robotic system to spot in pre-defined areas and in a pre-defined configuration.

25 However, for manual transfer of material, the placement of the material from the source onto the target tends to be more difficult to monitor and control. The material being transferred is often clear and thus once it is dry it can be very difficult to know where a spot has already been placed and therefore exactly where the next spot should be placed on the target.

It is therefore desired to overcome the problems associated with conventional manual spotting techniques.

35 According to the present invention there is provided the combination of a microscope slide and an adhesive label as claimed in claim 1. Other aspects of the invention are recited in the additional independent claims.

According to a preferred embodiment a pre-gridded microscope slide is provided which has a pre-printed alpha-numeric grid attached to the underside of the slide. The alpha-numeric grid appears through the glass slide with the numbers and letters in the correct configuration i.e. write read up.

Various embodiments of the present invention will now be described, by way of example only, and with reference to the accompanying drawings in which:

Fig. 1 shows a microscope slide with a label attached thereto; and

Figs. 2(a) and 2(b) show two different labels.

With reference to Fig. 1, transfer of material onto a target microscope slide 1 is carried out from a source plate to pre-defined positions on the top surface of the glass slide 1, using a pre-printed grid 2, preferably printed on a label 3, as a guide for placement of material to be spotted. Knowing which box or cell of the grid 2 has previously been spotted enables a user to safely spot the next sample in the next available empty box or cell of the grid or array 2.

The format of the pre-printed grid 2 may vary, but a 8 x 12 array or grid corresponding with a 96 well microtitre plate format is preferred. According to such an embodiment, 96 different DNA samples can be transferred from the source microtitre plate to the target microscope slide 1 with a one to one correspondence between the two of them.

Two different embodiments of label design are shown in Figs. 2(a) and 2(b). The labels are shown enlarged. In the embodiment shown in Fig. 2(a) each array 2 is approximately 6 mm x 4 mm i.e. each cell is approximately 0.5 mm x 0.5 mm. In the embodiment shown in Fig. 2(b) each array 2 is approximately 12 mm x 8 mm i.e. each cell is approximately 1 mm x 1 mm. The size and number of grids 2 on a single microscope slide 1 may vary depending on the amount of material that needs to be transferred. For the transfer of relatively large

sample amounts, the grids 2 can be made correspondingly larger so that the individual cells of the grid 2 can hold sufficient material.

5 After spotting, the pre-gridded slides 1 can be used in further analysis stages which may require the slides 1 to withstand extreme temperatures. The pre-gridded slides 1 can preferably withstand repeated freezing, including temperatures down to -20°C and repeated heating, up to 96°C over prolonged periods of
10 time. The slides 1 are also preferably resistant to corrosive chemicals and reagents.

15 The grids 2 have also been shown not to interfere with scanning of the glass slides 1 to detect fluorescent dyes, which is usually one of the final stages of spotted material analysis.

Preferably, the printed grids can be removed from the glass microscope/arraying slides 1, after transfer of material has occurred.

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Claims

- 5 1. A microscope slide in combination with a self-adhesive label, said microscope slide having a front face upon which, in use, a sample to be analysed is deposited, and a rear face, wherein:
 said label comprises indicia means so that when
10 said label is attached, in use, to the rear face of said microscope slide, said indicia means is visible when viewed through said front face of said microscope slide.
- 15 2. The combination as claimed in claim 1, wherein said indicia means comprises an alpha-numeric grid.
- 20 3. A microscope slide having a front face and a rear face, and wherein said microscope slide comprises an alpha-numeric grid.
- 25 4. A microscope slide as claimed in claim 3, wherein said alpha-numeric grid is attachable to the rear of said microscope slide so that said grid is viewable through said front face.
- 30 5. An adhesive label having a plurality of alpha-numeric grids printed thereon.
- 35 6. A label as claimed in claim 5, wherein the characters forming said alpha-numeric grids are printed as a mirror image of conventional alpha-numeric.
7. A pre-gridded microscope slide having a grid printed on or attached to one side.
8. A microscope slide as claimed in claim 7, wherein said grid comprises alpha-numeric characters.

9. A microscope slide as claimed in claim 8, wherein at least some of said alpha-numeric characters are printed so that when viewed in a mirror numbers will appear as 0, 1, 2, 3 ... n and characters will appear as A, B, C ... Z.

10. Apparatus for assisting in transferring biological or similar material to a microscope slide, said apparatus comprising a grid which is attachable to a microscope slide.

11. A microscope slide having an integral grid for assisting in the transfer of specimens to a desired location on said slide.

12. A microscope slide having at least one grid attached thereto, said grid having 96 or more cells.

13. An adhesive label for assisting the spotting of a microscope slide, said label having on one side an adhesive layer and on an opposed side a grid together with mirror images of alpha-numeric characters.

14. An arraying slide in combination with an attachable pre-printed display, said display dividing in use said slide into a plurality of areas each having an area of 1 mm² or less.

15. A microscope slide having at least 96 indexed areas in combination with a microtitre plate having at least 96 sample cells.

16. A method of transferring DNA samples from a microtitre plate to a microscope slide, comprising the steps of:

providing a microtitre plate with a plurality of DNA samples arranged in an array of samples;
providing a microscope slide;

attaching a pre-printed label having at least one grid to said microscope slide; and

transferring DNA material from said microtitre plate to said microscope slide using the grid on said label as a guide.

17. A method of manually spotting a microscope slide, comprising the steps of:

attaching a gridded indicia means to said microscope slide; and

spotting said microscope slide using said indicia means as a guide.

18. A microscope slide having at least three 8 x 12 arrays within an area of 5 cm x 1.5 cm provided thereon.

19. A microscope slide having at least six 8 x 12 arrays within an area of 3 cm x 1.5 cm provided thereon.

20. A microscope slide as claimed in claim 18 or 19, wherein said arrays are printed on an adhesive label.

21. A microscope slide as claimed in claim 18, 19 or 20, wherein said arrays comprise alpha-numeric characters.

22. A microscope slide as claimed in claim 21, wherein said characters are printed as mirror images of conventional alpha-numeric characters.

23. A plurality of glass microscope slides, each said slide having indicator means which defines at least 50 areas or cells, each said area or cell being smaller than or equal to 1 mm².

24. A plurality of glass microscope slides as claimed in claim 23, wherein each said area or cell is smaller than or equal to 0.5 mm².

25. A plurality of glass microscope slides as claimed in claim 24, wherein each said area or cell is smaller than or equal to 0.25 mm^2 .
- 5 26. A microscope slide substantially as hereinbefore described with reference to the accompanying drawings.

ABSTRACT

MICROARRAY SLIDES

- 5 An adhesive label 3 for attaching to a microscope slide 1 is disclosed. The label 3 may have one or more grids or arrays 2 provided on it to help an operator to manually spot a microscope slide 1.

[Fig. 1]

